

# SCIENCE CENTRE NEWS LETTER

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## SCIENCE CENTRE

Volume 3, Issue 08

### WHAT'S NEW IN SCIENCE

#### Strength exercise as vital as aerobic new research finds.

Push ups and sit ups could add years to our life according to a new study of over 80,000 adults. The largest study to compare the mortality outcomes of different types of exercise found people who did strength-based exercise had a 23 percent reduction in risk of premature death by any means, and a 31 percent reduction in cancer-related death. "The study shows exercise that promotes muscular strength may be just as important for health as aerobic activities like jogging or cycling," said Lead Author Associate Professor Emmanuel Stamatakis from the School of Public Health and the Charles Perkins Centre University of Sydney. The World Health Organization's Physical Activity Guidelines for adults recommend 150 minutes of aerobic activity, plus two days of muscle strengthening activities each week. The analysis also showed exercises performed using one's own body weight without specific equipment were just as effective as gym-based training. "When people think of strength training they instantly think of doing weights in a gym, but that

doesn't have to be the case. Many people are intimidated by gyms, the costs or the culture they promote, so it's great to know that anyone can do classic exercises like triceps dips, sit-ups and push-ups in their own home or local park and potentially reap the same health benefits". The research, published in the American Journal of Epidemiology on 1st November, 2017, is based on a pooled population sample of over 80,306 adults with data drawn from the Health Survey for England and Scottish Health Survey, linked with the NHS Central Mortality Register. The study was observational, however adjustments were made to reduce the influence of other factors such as age, sex, health status, lifestyle behaviors and education level. All participants with established cardiovascular disease or cancer and those who passed away in the first two years of follow up were excluded from the study to reduce the possibility of skewing results due to those with pre-existing conditions participating in less exercise.



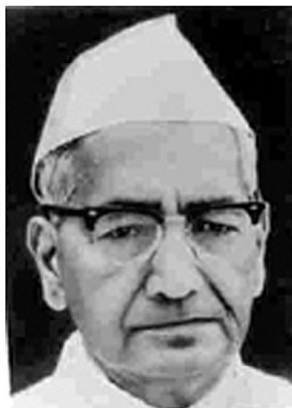
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Courtesy : St. Xavier's High School

### SCIENTIST OF THE MONTH

#### Ajudhiya Nath Khosla

Ajudhiya Nath Khosla was born on December 11, 1892 at Jalandhar, in Punjab. He did his graduation from D.A.V. College, Lahore, in 1912. He passed graduation from the C.E. Thompson Civil Engineering College, Roorkee in 1916 and did his Doctorate in Engineering from the Rensselaer Polytechnic Institute in 1956. Dr Khosla is the inventor of the Khosla Disc, used for precision leveling across rivers and wide valleys. As the Chairman of the Central Waterways Irrigation and



Navigation Commission, he transformed the Poona Research Station at Khadakvasla into a Central Water and Power Station. He made outstanding achievements in the field of river valley development and many important projects were completed under his supervision. Dr. Khosla was conferred the Padma Bhushan in 1954, the Shanti Swarup Bhatnagar Gold Medal in 1974 and the Padma Vibhushan in 1977.

Courtesy : St. Xavier's High School

## SCIENCE FACTS DECEMBER 2017

### AIDS Awareness Month



#### Timings

Tuesday to Friday  
9.30 am to 4.30 pm

Saturday - Sunday  
& Public Holidays  
11.00 am to 6.30 pm

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1st Dec	World AIDS Day. (by U. N.)
2nd Dec 1984	Bhopal Gas Tragedy.
3rd Dec	International Day of persons with disabilities. (by U. N.)
3 <sup>rd</sup> Dec 1886	Swedish Physicist Karl M.G. Siegbahn (Inventor of Rontgen Spectroscope) was born.
7 <sup>th</sup> Dec	International Civil Aviation Day. (by U. N.)
7 <sup>th</sup> Dec 1972	American Space Craft "APOLLO 17" launched towards moon with Scientist.
9 <sup>th</sup> Dec	World Girl Child Day (by U. N.)
9 <sup>th</sup> Dec 1868	German Physicist and Chemist Fritz Haber (Who discovered Haber Process) was born.
14 <sup>th</sup> Dec	National Energy Conservation Day.
15 <sup>th</sup> Dec 1852	Antoine Henri Becquerel (Who discovered Radioactivity) was born.
15 <sup>th</sup> Dec 1863	Arthur D. Little (Inventor of Rayon) was born.
17 <sup>th</sup> Dec 1797	American Scientist Joseph Henry (Inventor and Pioneer of Electromagnetism) was born.
17 <sup>th</sup> Dec 1903	Wright Brothers were the world's first successful persons who flew in an aeroplane.
17 <sup>th</sup> Dec 1908	Willard Frank Libby (Inventor of The Carbon 14) was born.
18 <sup>th</sup> Dec 1856	English Physicist Joseph John Thomson (Discoverer of electron) was born.
23 <sup>rd</sup> Dec	Farmer's Day. (Chaudhary Charansingh's Birth Anniversary)
24 <sup>th</sup> Dec 1818	Physicist James Prescott Joule (Who discovered the Principle of Conservation on energy) was born.
27 <sup>th</sup> Dec 1571	German Astronomer Johann Kepler (Who discovered elliptical orbits) was born.
	U.N. (United Nation)

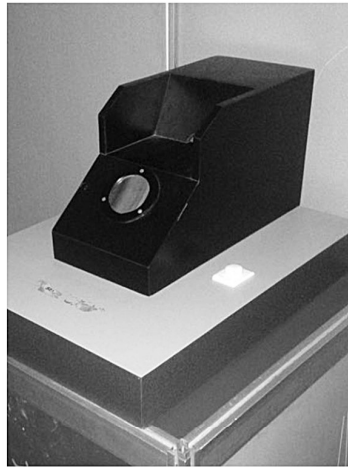
Answers: 1. a 2. b 3.c 4.b 5.d



## KNOW THE EXHIBIT AT FUN SCIENCE GALLERY

### Changing Colours

Watch your pupil in concave mirror and increase or decrease intensity of light by rotating knob of regulator. The pupil lets light into your eye. When you turn up the light, the pupil contracts becomes smaller. And it dilates or grows larger, when the light is dimmed. Thus pupil controls the amount of light entering into eye and protects cells from intense light.



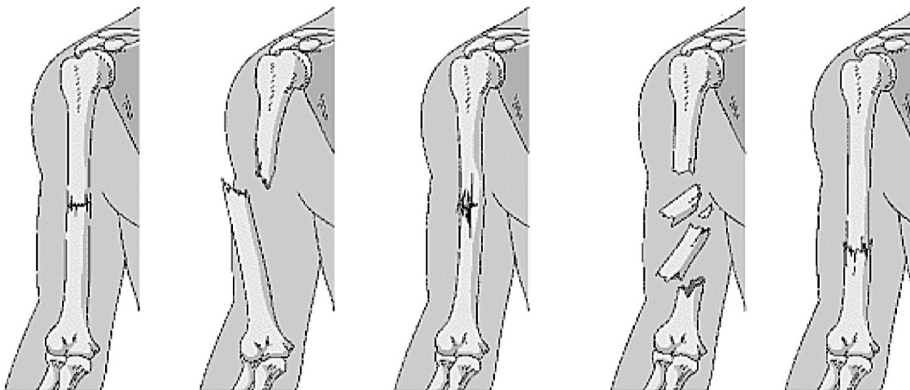
## SCIENTIFIC QUESTION

### What is the healing process of a broken bone?

Bone is living tissue that performs several important functions. Most obviously, the bones of the skeleton are essential for protection of organs, maintenance of posture and movement. Bone is very strong, but also relatively light weight. Bones are made up of microscopic channels that are surrounded by a very strong layer called the cortex, which in turn is surrounded by a tough outer surface known as the periosteum. When viewed in cross section the channels produce a honey comb effect. A part from making bones light weight, the channels allow blood flow throughout the bone tissue which supports constant metabolic activity within the bone. Breaking of a bone due to accident is a common occurrence. Depending on how the bone has broken, there is a different

name to it. If a bone is a just cracked with part of the shaft broken and the remainder bent, it is called an 'infracrion'. If there is a complete break, it is called a 'simple fracture'. In all cases, the broken bone can be easily joined and the body part can resume its earlier function. But the joining of the broken parts is not done by

the break, the young connective tissue cells start appearing in this clot, as the first step in repairing the fracture. These cells multiply quickly and become filled with calcium. Within 72 to 96 hours after the break, this mass of cells forms a tissue which unites the ends of the bones. In due course, more calcium is deposited in this



newly formed tissue, which eventually helps from hard bone that develops into normal bone over a period of a month, or months depending upon the break.

any adhesive, rather by the connective tissue cells of the bone itself. Bone tissue has the capability to rebuild itself. When a bone is broken, the softer tissues around the break are also torn and are covered by clotted blood and lymph. Within few hours of

All this is done by the bone tissue itself. The doctor applies the plaster cast to the broken limb in order to immobilize the bone and keep the broken edges in perfect

## Science Quiz

**1) Which kind of waves are used to make and receive cell phone calls?**

A) Radio Waves B) Visible Light Waves C) Sound Waves D) Gravity Waves

**2. Which of the following is a non metal that remain liquid at room temperature?**

A) Phosphorous B) Bromine C) Chlorine D) Helium

**3. Knot is a unit of speed of which of the following?**

A) Aero Plane B) Light Waves C) Ship D) Sound Waves

**4. Who invented telescope?**

A) Isaac Newton B) Galleli Gallelio C) James Watt D) Albert Einstein

**5. What is the biological polymer in paper?**

A) Glucose B) Sucrose C) Bakelite D) Cellulose

## 'Heritage Exhibition'

Heritage Exhibition was organized on the first floor of Art Gallery at Science Centre Surat on the occasion of 'World Heritage Week' from 19<sup>th</sup> to 26<sup>th</sup> November, 2017. In this exhibition the details of Historical places such as Fort, Mughalsarai, Gopi Talav, English Factory, Dutch Factory and European Cemetry, Social places such as Civil Hospital, Ashaktashram Hospital, Parsi Panchayat, Religious places such as Chintamani Derasar, Kantareshwar Mahadev Mandir, Kuvate Islam Mosque, Parsi Fire Temple and Educational places such as Sorabji Training College, I.P Mission School, Mahila Vidhyalaya etc. were displayed in different panels.



## Science Project

Surat Municipal Corporation in collaboration with Surat Smart City Development Ltd. had organized "Science Fair" at ground floor of Art Gallery, Science Centre, Surat from 21st to 22nd July 2017. St. Xavier's High School presented their project on 'Piezoelectricity' accumulates in certain solid materials in response to applied mechanical stress. The word Piezoelectricity means electricity resulting from pressure. It was discovered in 1880 by French Physicists Jacques and Pierre curie. The piezoelectric effect is under stood as the liner electromechanical interaction between the mechanical and the electrical state in crystalline with no inversion symmetry. The piezoelectric effect is a reversible process in which materials exhibiting the direct piezoelectric effect also exhibit the reverse piezoelectric effect. The inverse effect is used in production of ultrasonic sound waves. The most common piezoelectric material is quartz. Certain Ceramics, Rochelle salts and various other solids also exhibit this effect. Piezoelectric substances can be embedded underneath the asphalt layer to utilize the energy generated due to the vehicle motion. The vehicles move over the asphalt layer, the wheels exert a force or pressure into the substance. This will absorb the force and undergo the process of power generation, to be stored in batteries. The use of storage is essential at this stage. Lights are operated for 12 hours per day. Therefore, the energy can be dispersed when required.

